



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PATENT EXAMINING DIVISION

Applicant:	HARP <i>et al</i>	Docket Ref.:	FIREPLACE
Serial No.:	10/766,628		
Filing Date:	Jan. 28, 2004	Group Art Unit:	3749
Title:	FIRELIGHT REFLECTIVE SYSTEM AND METHOD	Examiner:	Carl D. Price

AFFIDAVIT PURSUANT TO 37 C.F.R. 1.132

I, Yashvinder Sabharwal, declare that I am a resident of Tucson, Arizona (Pima County). Based upon my personal knowledge, I would competently testify to the truth of the following:

1. I received a Bachelors of Science degree in Optics from the Institute of Optics at the University of Rochester in 1992. I received a Masters of Science degree in Optical Sciences from the Optical Sciences Center at the University of Arizona in 1994. I received a Ph.D. degree in Optical Sciences from the Optical Sciences Center at the University of Arizona in 1998.

2. Work History

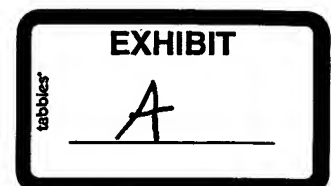
March 2005 - Present     Director, Product Marketing  
                                 Photometrics, Ltd., Tucson, AZ.  
                                 Responsible for product management of various optical, electronic, and software products.

July 1996 - Mar 2005     CO-FOUNDER  
                                 Optical Insights, LLC, Santa Fe, NM.  
                                 Designed and manufactured imaging products for various applications. Currently manufacturing MultiSpec Imager™ line of products for multi-spectral imaging and temperature measurement applications.  
                                 Optical Lens Design - Diffraction analysis, lens design and tolerancing of complicated optical systems including miniature optics and gradient index lenses.  
  
                                 Software Development - Design and development of Windows-based software for processing of multispectral images using Visual Basic and Visual C.  
  
                                 Optical Insights was acquired by Photometrics in March 2005.

Jan. 1999 - Sept. 1999     RESEARCH ASSOCIATE:  
                                 Dept. of Radiology, University of Arizona, Tucson, AZ.  
                                 Optical Design - Design and tolerancing of miniaturized objectives for high-resolution imaging inside the body. Design of mechanical components for focus control and optical sectioning for in-vivo slit scanning confocal microscope.  
                                 Fluorescence Imaging - Evaluating different fluorescent compounds, including PDT agents, for in-vitro and in-vivo imaging at the cellular level. Evaluating the use of multispectral imaging techniques with multiple fluorescent agents to improve image contrast.

Sept. 1992 - Dec. 1998     GRADUATE RESEARCH ASSOCIATE; Advisor: Dr. Arthur F. Gmitro  
                                 Optical Sciences Center/Dept. of Radiology, University of Arizona, Tucson, AZ.  
                                 Researching the use of optics technology in various medical imaging applications:

BEST AVAILABLE COPY



June 1992 - Aug. 1992

**OPTICAL ENGINEER**

*E.I. duPont de Nemours Company, Imaging Systems, Wilmington, DE.*

Heads-Up-Display - Developed image processing software in C for an optical test bench designed to measure and interpret the modulation transfer function (MTF) of holographic heads-up-display for car windshields.

June 1991 - Aug. 1991

**OPTICAL ENGINEER**

*Hughes Danbury Optical Systems, Optical Metrology Dept., Danbury, CT.*

X-ray Mirror Testing - Collaborated in the design and construction of a Twyman-Green interferometer system used to test a parabolic x-ray mirror.


Engineering Support - Developed software to process data acquired from mechanical and optical profilometers and from optical system used to test star trackers.

3. I have reviewed the relevant patent prosecution history with regard to the above-titled pending patent application. I am also aware of the current claim status for the above-titled pending patent application as amended in the response document submitted concurrently with this Affidavit.
4. Claim 1 of the present application currently recites: "A firelight reflective system for use within a fireplace having a firebox with a pre-determined interior surface structure, the system comprising at least one light or image reflective material having a viewable surface and a coupling surface, each light reflective material measured to substantially fit within, and couple substantially parallel to, any pre-determined interior surface structure of the firebox, the system adapted to provide a three-dimensional view consistent with the pre-determined interior surface of the firebox."
5. Claim 11 of the present application currently recites "A firelight reflective system for use within a firebox having a firebox with a pre-determined interior surface structure, the system comprising a plurality of flamelight reflective sheets, each sheet having a viewable surface and a coupling surface, each sheet adapted to be placed within, and coupled substantially parallel to, a pre-selected portion of the interior surface of the firebox, the system adapted to provide a three-dimensional view consistent with the pre-determined interior surface of the firebox."
6. Claim 17 of the present application currently recites "A method for reflecting firelight emitting from a fireplace having at least one surrounding surface wall and a bottom surface thereby forming a fire chamber therein housing a fire flamelight producing element, the method comprising the steps of: a) introducing at least one light or image reflective material, the material having a viewable surface and a coupling surface, each light reflective material measured to substantially fit within, and couple substantially parallel to, any pre-determined interior surface structure of the fire chamber, and b) removeably attaching a pre-selected coupling surface to a predetermined surface portion within the fire chamber, the method adapted to provide a three-dimensional view consistent with the pre-determined interior surface of the fire chamber. "
7. I have reviewed U.S. Patent No. 5,469,839 to Kasulis et al (the "Kasulis disclosure").

8. I have reviewed the Office's Office Action regarding this application dated 8/24/05 (the "August 24, 2005 Office Action").
9. In the August 24, 2005 Office Action, the Office rejects Claims 1 – 6 and 10 – 20 as being anticipated by the Kasulis Patent. As support for rejecting these claims, the Office recites that "since each panel of [the Kasulis Patent] displays an image to a viewer that is located within the vertical surfaces, the reflective panels of [the Kasulis Patent] would necessarily and inherently have an angle of incidence and an angle of reflection which are both substantially equal as viewed by a viewer of the systems in the manner set forth in applicant's claims." (*See* August 24, 2005 Office Action, *p.* 8).
10. In my professional opinion as an individual highly skilled in the optical arts, the Office's analysis is incorrect. The Office's recitation implies that "an angle of incidence and an angle of reflection are both substantially equal as viewed by a viewer of the systems" *because* "each panel of [the Kasulis disclosure] displays an image to a viewer that is located within the vertical surfaces." There is no causal relationship in this case. It is a basic law of physics that the light incident on a reflective surface will *always* have an angle of reflection equal to the angle of incidence without consideration of the viewer. Based on the status of the currently amended claim set, there is no attempt to patent such a fundamental law of physics. However, the claims recite that the optical view by a viewer of the firelight in the fireplace or firebox will be different in accordance with the present invention when compared to the view created by the Kasulis disclosure. The Kasulis disclosure teaches the use of mirrors positioned at angles to the interior surfaces of the fireplace or firebox, which will create an optical view that is different in perspective from the original three-dimensional construction of the fireplace or firebox. (*See e.g.*, Kasulis disclosure, Figs. 2, Col. 5, *ll.* 53 – 56; Fig. 8, Col. 5, *ll.* 59 – 62). Any images reflecting off the Kasulis patent surfaces (for example, surfaces 76, 78 in the Kasulis disclosure Figure 8) would necessarily present an elongated optical image of the firelight to a viewer of the Kasulis invention. The present invention, in contrast to the Kasulis disclosure, teaches the positioning of the reflective material to be substantially parallel to the interior surfaces of the fireplace or firebox, maintaining an optical view consistent with the predetermined interior surface of the fireplace, firebox or fire chamber (*see* ¶¶ 4 – 6 above).
11. The undersigned being warned that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, declares that all statements made of his own knowledge are true; and all statements made on information and belief are believed to be true.

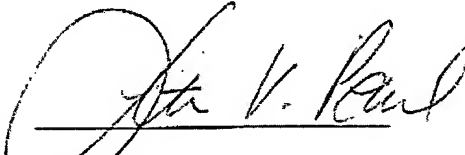
*FURTHER AFFIANT SAYETH NAUGHT*

Executed this 21<sup>st</sup> day of December, 2005.

By:   
Yashvinder Sabharwal, Ph.D.

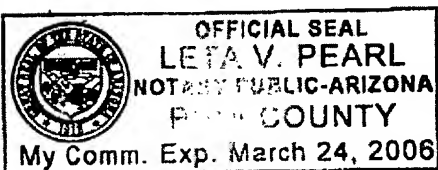
STATE OF ARIZONA           )  
  ) §§  
COUNTY OF PIMA           )

SUBSCRIBED AND SWORN TO BEFORE me this 21<sup>st</sup> day of December, 2005, by Yashvinder Sabharwal.

  
Notary Public

My commission expires:

24 March 2006



BEST AVAILABLE COPY